cell, (c) at least one first nucleic acid encoding at least one first non-native antigen, and (d) at least one non-native second antigen displayed on the surface.

8. The complex of claim 1, wherein at least one first antigen is the same as at least one second antigen.

9. The complex of claim 1, wherein the virion comprises at least one chimeric protein comprising at least one first domain derived from a viral capsid protein and at least one second domain comprising at least one second antigen or at least one ligand.

26. A method of immunizing a mammal, the method comprising introducing a complex comprising (a) a virion having a surface and a lumen and comprising viral capsid proteins, (b) at least one first nucleic acid encoding at least one first non-native antigen, and (c) at least one second non-native antigen displayed on the surface into a mammal under conditions sufficient for the mammal to mount at least one immune response to at least one of the antigens.

40. A pharmaceutical composition comprising (a) the complex of claim 1, and (b) a physiologically-acceptable carrier.

Please also add new claims 44-51:

44. The pharmaceutical composition of claim 43, wherein at least one polypeptide comprises a domain derived from CD40-L or osteopontin.

45. The pharmaceutical composition of claim 43, wherein the polypeptide is a cytokine.

46. The complex of claim 16, wherein at least one polypeptide is CD40-L.

47. The complex of claim 16, wherein at least one polypeptide is osteopontin.

48. The method of claim 23, wherein at least one polypeptide is CD40-L.

49. The method of claim 23, wherein at least one polypeptide is osteopontin.

50. The method of claim 30, wherein at least one polypeptide is CD40-L.

51. The method of claim 30, wherein at least one polypeptide is osteopontin.

REMARKS

Summary of the Invention

The invention concerns a complex comprising a virion having a surface and a lumen and comprising viral capsid proteins, at least one non-native ligand displayed on the surface, which at least one ligand recognizes an epitope present on an immune effector cell, and at least one first nucleic acid encoding at least one first non-native antigen. (claims 1-6 and 8-18), a method of inoculating a mammal (claims 19 and 21-25),